

THREE FORKS

BROADWATER COUNTY

The Three Forks site was located approximately 6 miles north-northwest of the town of Three Forks at 45 59 20 N and 111 35 32 W (Site No. 10 on Map II-1). The site was located on a hill in gently rolling terrain at an elevation of 4,580 feet. The site was established by the U.S. Bureau of Reclamation as part of its Northern Great Plains Wind Energy Study.

Wind data were gathered at this site from June 27, 1981, to September 15, 1982. Data from the wind sensors were continuously recorded on cassette tape at the site. These tapes were further processed by computer to yield hourly averages of wind speed, wind direction, the average cube of the hourly speed, and standard deviation of hourly wind speed. In addition, maximum and minimum instantaneous values of wind speed during each hour were recorded. Anemometer height was 10 meters. Prevailing winds from the southwest were accurately measured, but east winds were somewhat screened by a hill.

Data recovery was fair to excellent, ranging from 56.5 percent in July and 97.1 percent in June to 100.0 percent during all other months. Overall data recovery was 93.7 percent.

The average annual wind speed at this site was 8.6 miles per hour. Average monthly wind speeds varied from 6.4 miles per hour in June to 10.6 miles per hour in January. The windiest months were January through April.

Average monthly wind power ranged from 27.2 watts/m² in June to 139.0 watts/m² in January. Average annual wind power was 72.5 watts/m².

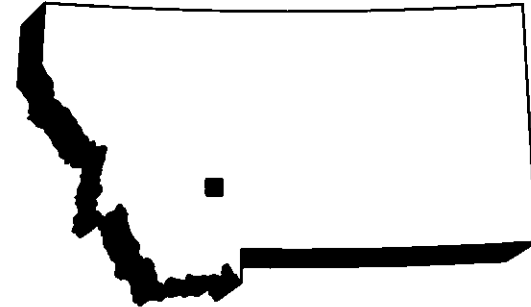


Table IV - 14
Monthly Wind Speed Distribution
BROADWATER COUNTY - THREE FORKS
06/27/81 - 09/15/82

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	
CALM	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	CALM
0.1-1.0	0.0	0.3	1.3	0.3	0.0	0.5	0.1	0.5	1.0	0.4	0.1	0.3	0.4	0.1- 0.4
1.1-2.0	1.3	1.2	2.2	1.7	2.3	3.7	1.4	2.6	2.4	1.7	1.1	2.4	2.1	0.5- 0.9
S 2.1-3.0	5.1	3.9	4.6	3.9	7.0	10.9	3.6	6.9	6.7	5.8	5.7	6.7	6.0	1.0- 1.3
P 3.1-4.0	5.4	4.6	4.7	4.7	7.9	11.4	5.7	10.1	9.6	7.0	7.2	7.1	7.5	1.4- 1.8
E 4.1-5.0	6.0	6.5	6.0	7.4	12.1	15.5	10.2	16.0	12.7	10.3	8.6	10.2	10.7	1.9- 2.2
E 5.1-6.0	4.7	7.3	6.5	6.4	10.2	10.5	11.0	10.8	11.4	9.8	9.0	9.9	9.2	2.3- 2.7
D 6.1-7.0	7.5	12.2	9.3	10.3	10.2	14.8	11.5	10.9	11.9	13.3	11.7	11.0	11.2	2.8- 3.1
7.1-8.0	8.3	9.1	5.9	9.0	5.8	8.1	8.7	7.5	9.0	7.5	10.3	7.9	8.1	3.2- 3.6
M 8.1-9.0	9.9	13.2	9.3	10.0	6.5	7.3	10.0	7.5	7.5	7.5	14.9	9.3	9.2	3.7- 4.0
I 9.1-10.0	6.3	6.5	7.3	5.1	4.0	3.3	7.4	5.2	4.2	6.5	7.4	5.1	5.6	4.1- 4.5
L 10.1-11.0	7.9	7.9	5.5	7.1	4.3	3.7	6.1	5.5	6.4	3.6	8.9	6.3	6.0	4.6- 4.9
E 11.1-12.0	5.1	5.2	3.4	4.0	3.6	2.0	3.6	3.4	3.0	4.0	4.2	3.2	3.7	5.0- 5.4
S 12.1-13.0	3.9	4.8	4.8	4.9	4.0	1.9	5.1	2.5	1.9	4.3	2.8	3.2	3.5	5.5- 5.8
/ 13.1-14.0	3.8	2.5	3.1	3.5	2.7	2.1	2.7	1.9	1.7	3.2	1.5	3.2	2.6	5.9- 6.3
H 14.1-15.0	3.9	3.1	3.8	3.3	3.4	1.4	1.8	1.9	2.7	1.7	1.8	3.6	2.6	6.4- 6.7
O 15.1-16.0	2.0	1.9	3.0	2.1	3.1	0.6	2.4	1.5	1.1	1.5	0.6	1.5	1.7	6.8- 7.2
U 16.1-17.0	2.4	1.2	2.7	2.1	2.6	0.6	1.4	1.5	0.6	1.1	0.8	2.3	1.6	7.3- 7.6
R 17.1-18.0	3.9	1.3	2.6	2.1	2.4	0.5	1.9	1.5	0.7	1.3	0.8	1.5	1.7	7.7- 8.0
18.1-19.0	2.4	1.6	1.7	1.4	1.6	0.3	1.1	0.5	0.6	2.2	0.3	0.7	1.1	8.1- 8.5
19.1-20.0	2.0	0.9	3.0	2.5	1.1	0.5	0.6	0.7	1.3	1.9	0.4	0.9	1.3	8.6- 8.9
20.1-25.0	5.0	3.3	6.7	7.1	3.9	0.4	2.9	1.1	3.3	3.9	1.1	2.2	3.2	9.0-11.2
25.1-30.0	1.9	0.7	1.9	0.8	0.8	0.1	0.8	0.0	0.4	1.3	0.7	1.2	0.8	11.3-13.4
30.1-35.0	0.7	0.6	0.5	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	13.5-15.6
35.1-40.0	0.1	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.7-17.9
>40.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	>17.9
AVERAGE														
SPEED (MPH)	10.6	9.3	10.4	10.1	8.9	6.4	8.8	7.3	7.6	8.8	8.0	8.5	8.6	
AVERAGE														
SPEED (M/SEC)	4.8	4.2	4.6	4.5	4.0	2.9	3.9	3.3	3.4	3.9	3.6	3.8	3.8	
AVERAGE														
WIND POWER														
(WATTS/M**2)	139.0	86.3	122.2	110.9	88.0	27.2	63.9	39.3	51.5	78.4	50.0	72.1	72.5	
PERCENT DATA														
RECOVERY	100.0	100.0	100.0	100.0	100.0	97.1	56.5	100.0	100.0	100.0	100.0	100.0	93.7	

ANEMOMETER HEIGHT = 10 METERS = 33 FEET
NUMBER OF OBSERVATIONS = 10032
PERCENTAGE DATA RECOVERY = 93.7

SOURCE: GEORESEARCH, INC.